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THE PERISTOME V.

By A. J. Grout.

In my third article on this topic I called attention to the fact that the peristomes of the Buxbaumiaceæ are somewhat intermediate between the Arthrodont and Nematodont types. In the Encalyptaceæ also there are some interesting transitional stages which, perhaps, will be better understood after we consider the method of formation of the Arthrodont peristome in detail. I have chosen *Mnium hornum* to illustrate this article because Schimper's illustrations of this species serves my purpose so well.

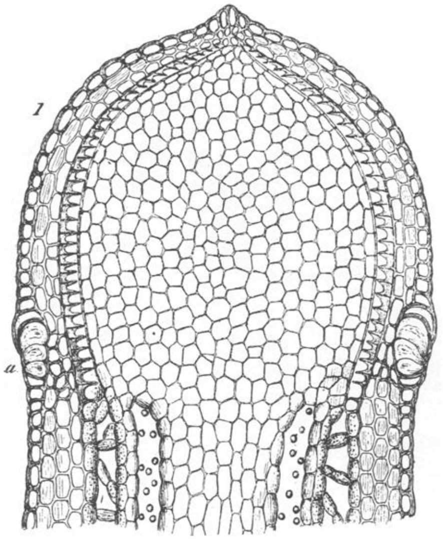
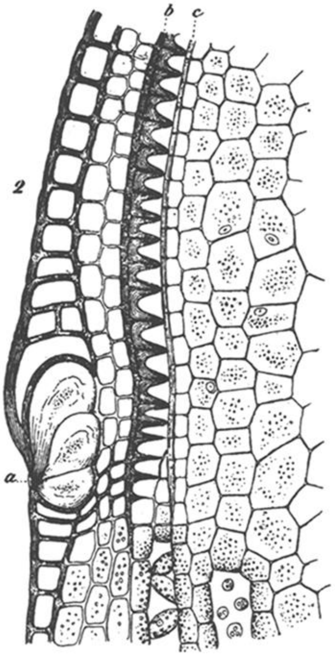
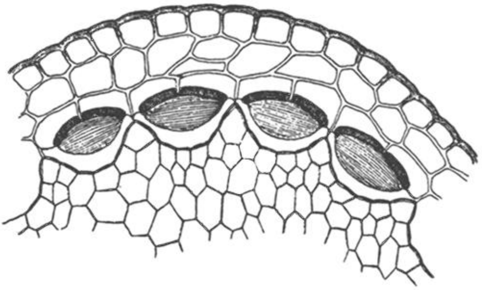


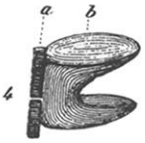
Fig. 1.

Fig. 1. Transverse section through the upper part of a nearly ripe mature capsule of *Mnium hornum*. This figure shows the upper portion of the archesporium with several spores: the columella occupies the upper portion inside the peristome; the annulus is shown at the junction of the operculum with the mouth of the capsule; x 120.

The basis of the Arthrodont peristome, both double (Dipiolepideæ) and single (Aplolepideæ) is a layer of sixteen large cells lying just underneath the operculum and shown in cross section in Fig. 3. This layer we will call the peristomial layer for convenience. In *Mnium hornum* and nearly all the double peristomed mosses except the Funariaceæ the teeth of the outer peristome are formed by the thickening of the outer walls of the cells, and the inner peristome by a much less pronounced thickening of the inner walls. The thickening laid down on the outer walls is continued along the horizontal walls which separate each tier of cells, formthe projection (trabeculæ) on the inner faces or the teeth, Fig. 5 and Fig. 2, *b*. These trabeculæ and the walls thus thickened form the transverse lines separating the joints or articulations in the teeth of *Mnium*, *Bryum*, *Hypnum*, etc. The layer of cells next outside the peristomial layer is composed of twice as many cells, and the median ziz-zag line of the peristome teeth marks the intersection of vertical radial wall of these cells with the outer wall of the peristomial layer, the alternating walls coming at the boundary line between the teeth and consequently not leaving any traces. (Fig. 3). A reference to Plate I. of this volume of The Bryologist, Figs. 15 and 17, will be very helpful in understanding this matter. A description of these figures is printed in the May number. In Fig. 15 the zig-zag line shows plainly, and in Fig. 17, the left hand side shows clearly the trabeculate inner face of the tooth. The plates of lignin forming these thickenings are deposited on both sides of the original wall as shown in Fig. 5, so that the teeth are formed of a double layer of plates, Two rows on the outside and a single row inside. The cells next inside the peristomial layer are much more numerous and somewhat irregular. They follow the curvature of the peristomial cell walls forming a keel alternating with each cell as shown in Fig. 3.







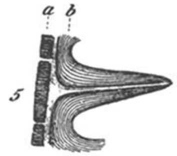


Fig. 2. A longitudinal section of a capsule of *Mnium hornum* x 500; *a*, annulus; *b*, outer peristome; *c*, inner peristome. This section shows clearly the method of formation of the double peristome. The teeth of the outer peristome are formed by thickenings or "plates" laid down on the inner and outer faces of the outer wall of a layer of cells extending around the capsule; these thickenings are continued along the top and bottom walls of these cells to form the transverse bars or trabeculæ. The inner wall of this same layer of cells becomes thickened to form the inner peristome.

Fig. 3. Shows one-fourth of a cross-section through the same capsule and gives a good idea of the way the thickenings on the top and bottom walls project into the cells, and of the keel-shape of the segments or sections of the inner peristome.

Fig. 4. Shows a single joint of a tooth; *a* is the deposit laid down on the dorsal wall of the cell, and *b* shows the deposit made on the inside.

Fig. 5. Shows the deposit laid down on both sides of one of the bottom (or top) walls of these cells at *b*, and of the external deposit at *a*.

The inner wall of the peristomial layer becomes thickened on either side of the keel line forming the segments of the inner peristome, while the intermediate cell walls of the other cells just inside the peristomial layer forms the cilia.

The number of these cells adjoining each cell of the peristomial layer is somewhat variable, consequently, as is well known, the number of cilia between the segments often varies in the capsule (See also Fig. 15, Plate 1). Sometimes not only the vertical cell wall becomes thickened but the transverse junction also, when the cilia become appendiculate. The separation of teeth and segments, as well as the separation of tooth from tooth and segment from cilium, is brought about by the absorption or breaking down of the connecting portions of the cell walls. In some degenerate peristomes as in the the case of *Pylaisia intricata*, *P. velutina* and ***Burnettia** (*Homalothecium*) **subcapillatum** the walls connecting inner and outer peristomes remain, so that the two never become separate.

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*Named in honor of the late D. A. Burnett.

THE MOSSES OF ALASKA.

BY J. CARDOT and I. THERIOT

From "Papers from the Harriman Alaska Expedition."

(CONTINUED.)

ENTHOSTHODON SPATHULIFOLIUS Card. and Thér.

Polygamous, rather densely cæspitose, green above, brown within. Stem erect, 10–15 mm. high, radiculose, branching with slender clavate branches, starting beneath the parichætium. Leaves soft erect-appressed when dry, sometimes subcrispate, spreading when moist, the lower minute, ovate, the upper larger, 1.5–2 mm. long, 1 broad, oblong-spathulate, entire, obtuse or subapiculate, margins plane, sometimes subrevolute towards the base; costa thin, attenuate, vanishing not far from the apex; areolation lax, basal cells subrectangular, 60–80 by 30μ, median and upper shorter, rectangular, quadrate or subhexagonal, 25–30μ long, 20 broad, the marginal cells often longer and narrower. Flowers polygamous, terminal, sometimes unisexual, sometimes synoicous; antheridial buds growing at the tip of the branches. Capsule on a pale yellow flexuous seta 6–9 mm. long, obliquely erect, pyriform with a distinct attenuate neck; operculum convex mammillate. Calyptra short-cucullate, not at all or scarcely inflated. Other characters unknown.

From St. Paul Island (Trelease, 2067, 2074).

A remarkable species, very distinct from all the *Enthostodon* of Europe and North America by its polygamous inflorescence, its leaves shortly spatu-